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TECHNICAL NOTE

U.S. DEPARTMENT OF THE INTERIOR
Bureau of Land Management

U.S. DEPARTMENT OF AGRICULTURE
U.S. Forest Service

WILD, FREE-ROAMING HORSES - AN ANNOTATED BIBLIOGRAPHY

by Mark Zarn, Thomas Heller and
Kay Collins, Research Biologists
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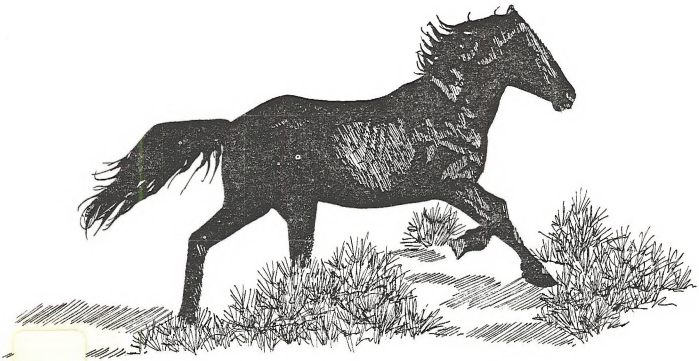

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INTRODUCTION

The purpose of this bibliography is to provide personnel of the U.S. Forest Service and U.S. Bureau of Land Management with a comprehensive annotated list of articles, books, manuscripts, etc. on Wild Horses. Because of the limited information available specifically on Wild Horses, much of the information included in the bibliography is from articles on domestic horses or from data on other members of the Equidae.

The bibliography is divided into sections for easier use and within each section alphabetically by author.

At the end of each citation a code appears in parentheses giving the location of publication availability. Many of the articles will also be available at local public and university libraries.

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ASSOCIATIONS AND ORGANIZATIONS

Anonymous. 1970. Help save the mustang! Equestrian Trails. 26(6):6-7. (DPL)

This article explains the objectives of the National Mustang Association formed in 1965. The Association was formed to preserve and protect the "mustangs." A brief history of "mustangs" in this century is given.

Anonymous. 1970. Ranch for wild horses. Chronicle of the Horse. 33(47): 42-43. (DPL)

The National Mustang Association under the direction of Tom Holland, president and founder, has bought the 68,000-acre Lancaster Ranch near Caliente, Nevada for a wild horse preserve and museum. The Association plans to stock the ranch with wild horses from overgrazed areas.

Bock, Diane. 1970. The American mustang. Western Horseman. 35(10): 36. (DPL)

This article discusses specific conformation points adopted by the American Mustang Association. These conformation points were arrived at through research into South American registries of native horses, Spanish archives and Western histories.

Brislawn-Edwards Wild Horse Research Farm Newsletter. 1974+ Vols. 10+. (248 North Main Street, Porterville, California 93857). (DPL)

A periodically published newsletter from the Brislawn-Edwards Wild Horse Research Farm in Porterville, California. Research findings and news of "Spanish" horses are included along with notices of events concerning "Spanish" horses and addresses of people involved with breeding "Spanish" horses.

Hickman, Mickey. 1970. Color on the plains. Horse Lover's Magazine. 35(3): 38-39, 62. (DPL)

The history of the Spanish Mustang, a listing of his characteristic features, information on his many and unusual colors, and a plea to join the registry are all contained in the article.

Hickman, Mickey. 1970. The Spanish mustang. Western Horseman. 35(10): 150. (DPL)

A discussion of the Spanish Mustang registry founded in 1957. To date 300 horses are registered, not counting current foals. Included in the registry are horses descended from those acquired by Ferdinand and Bob Brislawn, wild horse ranchers.

International Society for the Protection of Mustangs and Burros. Newsletter. Irregular. (140 Greenstone Drive, Reno, Nevada 89502). (DPL)

This newsletter discusses the activities of the society and outlines current national events such as new legislation concerning wild horses. Violations of laws protecting wild horses are mentioned often accompanied by eyewitness accounts.

McMullen, Rosemarie. 1966. The mustang. Western Horseman. 31(10): 26, 53. (DPL)

The American Mustang Association was formed to ensure that mustangs survive. The goal of the Association is to produce the ideal Andalusian type characteristics as the standard conformation of the mustang. Shows for these registered horses are sponsored by the Association.

National Mustang Association. 1971. Help save the mustangs! Equestrian Trails. 26(7): 27. (DPL)

The Association explains that they have placed a down-payment on a ranch in Nevada to which wild mustangs and burros can be taken. They have formed a group whose services are offered to ranchers who wish these animals removed from their lands. The article describes the need for funds and legislation, and explains how they plan to campaign throughout the country to save the mustangs.

Richards, Lawrence P. 1958. The Spanish Mustang Registry. Western Horseman. 24(10): 16, 93-94. (DPL)

The purpose and formation of the Spanish Mustang Registry are discussed. The purpose of the organization and registry is to ensure that the remaining horses with the characteristics of the Spanish "Barb" are registered and preserved. They do not want Spanish "Barbs" hybridized with other horses as was done in the past to genetically improve the strain.

Tinker, Nancy. 1969. Broomtail registry. Horse Lover's Magazine. 33(4): 38-39, 62. (DPL)

The author relates the fate of what was once over a million wild horses, descended from the Spanish Andalusians. She describes the efforts of Robert and Ferdinand Brislawn to form a breeding herd of mustangs over a period of thirty years, gives the standards for which they have aimed, and discusses how some of their herd animals have been caught in the wild.

Wild Horse Organized Assistance. Newsletter. Irregular. Reno, Nevada. (P. O. Box 555, Reno, Nevada 89504). (DPL)

This newsletter alerts members of the organization of activities concerning wild horses such as legislation, roundups, grants, studies, etc. Members are also urged to write letters to appropriate government officials to maintain protection for wild horses. Wild horses that will be available for adoption are mentioned in the newsletter.

EQUINE SCIENCE

Anonymous. 1971. Family: Equidae. World of Wildlife. 1(5): 86-89. (DPL)

The first horse, Eohippus from the Eocene period, is traced to the present day Equus. Mention is made of the changes in toes, skull, and dentition. A brief description of the general habits of Equus spp. covers their senses, dentition, habitat, and digestion. Illustrated with maps, photographs and charts.

Alexander, F. 1963. Digestion of the horse, p. 259-268. In: D. P. Cuthbertson, ed. Progress in Nutrition and Allied Sciences. Olive and Boyd, Edinburgh. (DPL)

A review of available literature on horse digestion, this article covers gastric digestion, mechanics of gastric digestion, digestion in the small intestine, digestion in the large intestine, pharmacological studies, and microbiology. Extensive list of references.

American Association of Equine Practitioners. 1966. Official Guide for Determining the Age of the Horse. Fort Dodge Laboratories, Fort Dodge, Iowa. n.p. (CSU)

Thoroughly illustrated with line drawings which depict teeth of horses at various ages as generally seen today in America. Descriptive legends accompany the drawings. This text is based on the premise that teeth provide the most precise tool available for the determination of the age of a horse. Teeth appear, develop, wear, change form and are shed with a regularity that veterinarians have learned to recognize with a reasonable degree of accuracy.

Bell, R. H. V. 1970. The use of the herb layer by grazing ungulates in the Serengeti, p. 111-124. In: A. Watson, ed., Animal Populations in Relation to their Food Resources. Blackwell, Oxford. (DPL)

The seasonal use of grazing areas by African ungulates has developed in a sequential manner dictated by the growth form of the vegetative layers in relation to topography. The animals are independent of each other's effect on vegetation only during the wet season when there is abundant forage. Analysis of diet was performed on four of the ungulates; zebra, wildebeest, topi and Thomson's gazelle. Freshly

ingested stomach contents were divided into two categories of vegetation: dicotyledons and monocotyledons. The zebras led the grazing succession. They opened up the herb layer for other animals by consuming the coarses, low protein, high crude fiber vegetation. To explain the ability of the zebra to survive on a low quality diet, the digestive system of horses is described and compared to that of the ruminant. Diet selectivity, interspecific associations, and alternative grazing successions are discussed. The author concludes that the presence of one species in the grazing succession is beneficial to the others.

Bell, Richard H. V. 1971. A grazing ecosystem in the Serengeti. Scientific American. 225(1): 86-93. (DPL)

This study examines the migration and grazing patterns of three species of large herbivore (wildebeest, zebra, and Thomson's gazelle) in the Serengeti National Park. The animals make use of the herb layer in a regular sequence: first the zebras graze and trample the coarser, stemmier vegetation, they are followed by the wildebeest who in turn prepare the area for the delicate, selective grazing of Thomson's gazelle. Analysis of the stomach contents of the three species revealed that the selected vegetation corresponded to their position in the grazing succession. The reason for this sequence of grazing is due to the differences in the digestive systems of ruminants and non-ruminants and body size which has an effect on their rate of metabolism. If this grazing succession broke down there is a possibility that the Thomson's gazelle might not be able to survive.

Berliner, Victor R. 1959. The estrous cycle of the mare, p. 267-289. In: H. H. Cole and P. T. Cupps, eds., Reproduction in Domestic Animals. Academic Press, N. Y. (DPL)

This paper is divided into five parts. Part I is concerned with the breeding season of mares; part II the pattern of the estrous cycle; part III the physiological and histological changes in the reproductive system; part IV the behavioral pattern of the cyclic mare; and part V the adaptations of the breeding program to cyclic events. The author discusses and comments on the inconsistencies as well as areas of agreement within the literature on the estrous cycle of the mare.

Blakeslee, Jodean Kay. 1974. Mother-Young Relationships and Related Behavior Among Free-Ranging Appaloosa Horses. M.S. Thesis, Idaho State University. 113 p. (DPL)

Approximately 125 free-ranging Appaloosa horses in Idaho were studied by direct observation in a 5,000-acre pasture from June through August, 1973. The horses were also observed at a 3,000-acre winter pasture in Idaho. The author discusses the following areas: the estrus cycle, gestation period, changes just prior to parturition, foaling, post partum activity, imprinting, bringing the foal into the group, nursing, recumbency and resting, recognition, foal elimination, foal grazing and drinking, foal's exploratory and investigative behavior, and relationships between foals and other group members. A well-documented study with a thorough list of references.

Bone, Jesse F. 1964. The age of the horse. Southwest Veterinarian. 17(4): 269-272. (DPL)

A descriptive article which tells how to determine the age of a domestic horse by examining its teeth. Guidelines are included.

Burkhardt, J. 1947. Transition from anestrus in the mare and the effects of artificial lighting. Journal of Agricultural Science. 37: 64-68. (DPL)

Anestrus mares were divided into four treatment groups. The Group I mares received an additional period of artificial light. Group II mares were exposed to ultraviolet light which was gradually increased during a four-week period. The light was applied only to their flanks and bellies and their eyes were hooded. Group III mares were kept in confinement under normal light conditions. Group IV mares were allowed to run in the paddock. In Group I ovarian stromal growth, increased vascularity of the cervix and vagina, plus shedding of the coat occurred within 15-30 days from the start of treatment. Follicles appeared soon after and the first appearance of estrus occurred about 30 days earlier than in the other groups. The author concluded that light affects reproductive activity in the mare and, since irradiation of the ovaries with ultraviolet light did not change the normal occurrence of estrus, he suggested that the eye was probably the receptor organ.

Castle, W. E. 1954. Coat color inheritance in horses and in other mammals. Genetics. 39(1): 35-44. (DPL)

A scientific discussion of the genetics of horse coat color inheritance presenting a genetic framework for explaining horse colors in harmony with that derived from the experimental study of other mammals.

Clegg, M. T. and W. F. Ganong. 1969. Environmental factors affecting reproduction, p. 473-488. In: H. H. Cole and P. T. Cupps, eds., Reproduction in Domestic Animals. Academic Press, New York. (DPL)

The authors review the evidence of the role of environmental factors in the reproductive physiology of individual domestic animals. Discussion is grouped under four headings: light, temperature and humidity, social stimuli, and other factors. The introduction covers these four factors as they relate to the available evidence on the various species that have been studied. The specific animals include the horse, rabbit, sheep, cattle, swine, and goat. Most of the evidence on the horse concerns the effect of light on the estrus cycle of the mare and its effect on the quantity and quality of semen from the stallion. The authors state that the specific effects of temperature on reproductive activity in the mare have not been critically studied. Extensive references.

Day, F. T. 1940. Clinical and experimental observations on reproduction in the mare. Journal of Agricultural Science. 30(2): 244-261. (DPL)

"An extended study on the length of the estrus period shows variation of from three to 54 days and diestrus from five to 30 days with averages of seven to eight days and 11 to 16 days, respectively. The time and condition of ovulation is pointed out together with its variation by treatments with pregnancy urine and gonodotrophic hormones and the influence of these upon pregnancy and the length of the cycles." Biological Abstracts.

Denhoff, Gay. 1974. Should the Wild Horse of Alberta be Protected? University of Calgary. 25 p., 6 maps. (DPL)

The author discusses wild horses which inhabit an area just east of the Rocky Mountains in Canada. There is a geologic description of the area along with a discussion of the types of forests found there. The author gives a detailed listing of plant species found in each of the ecological zones

mentioned. The main herbivore wild life in the wild horse ranges are elk, deer and moose. Approximate locations of herds are given. The author estimates that there are roughly a total of 1000-1500 horses in the Alberta Province. Feeding and watering habits of wild horses are discussed.

Edwards, Gladys Brown. 1970. The long and short of it. Arabian Horse World. 10(11): 87-94. (DPL)

The Exterior of the Horse, a book by two French authors, Boubaux and Barrier, printed in 1884, is quoted extensively on the relationship between the length of a horse's loins (lumbar vertebrae) and that of its back (thoracic vertebrae). Such problems as foraging are analyzed in some detail. The number of lumbar vertebrae is also discussed in relation to Arabians, other breeds of horses, zebras, and donkeys. Three tables from several sources are reproduced, listing the number of vertebrae in these two areas plus those in the croup (sacral) for these kinds of equines plus the Shetland pony and the Przewalski horse.

Ensminger, M. E. 1951. Horse Husbandry. Interstate Printers and Publishers, Danville, Illinois. 336 p. (DPL)

A horseman's reference book presented as a high school or college textbook. The book covers types, classes, breeds, selecting and judging, age, breeding, feeding and disease of horses.

Estes, Richard D. 1974. Zebras offer clues to the way wild horses once lived. Smithsonian. 5(8): 100-107. (DPL)

The paper is based on the findings of the social behavior study on Burchell's zebras done by the ethologist Hans Klingel over a three-year period in Africa. It describes in detail the family social organization of the zebras. The article is written for a general audience and is scientific in scope.

Feist, James Dean. 1971. Behavior of Feral Horses in the Pryor Mountain Wild Horse Range. M. S. Thesis. University of Michigan. 129 p. (DPL)

"The objectives of this study were to investigate the behavior patterns, social organization, and population structure of the wild horses of the Pryor Mountains, Wyoming-Montana. To facilitate an accurate account of the population

structure and social organization, the entire herd on the Range was identified as individuals. Documentation of daily and seasonal activity patterns, movements, possible home ranges and/or territories, dominance interactions, leadership, and breeding relationships was made. Qualitative and quantitative descriptions and photographs of stereotyped behavior acts were taken." Behavior patterns were analyzed and compared to the behavior of other Equidae from other geographical locations.

Glover, J. and D. W. Duthie. 1958. The nutritive ratio/crude protein relationships in ruminant and non-ruminant digestion. Journal of Agricultural Science 50: 227-229. (DPL)

The author determined that the nutritive ratio of animal food was significantly related to the crude-protein content of that particular food in both ruminant and non-ruminant digestion. This confirms that a relationship exists between the total crude protein and digestible protein in ruminant feed. It also strongly suggests that there should also be a relationship between these two proteins in non-ruminant feeds. The author warns that it would be unwise to assume a constant relationship between the nutritive ratio and the crude protein content of feed until more data are available on non-ruminants at low-protein levels.

Gremmel, Fred. 1939. Coat colors in horses. Journal of Heredity. 30(10): 437-445. (DPL)

A detailed heredity scheme is expounded for color inheritance in horses, based upon observations, clinical tests, and histological examination. Hypothesis holds that gene combinations on three major loci (probably modified by accessory genes) have quantitative and cumulative effects on pigment production, resulting in various colors and shades. Certain color patterns are due to independent dominant genes showing no epistasis toward each other. Further details of patterns are discussed.

Groves, Colin P. 1974. Horses, Asses and Zebras in the Wild. Ralph Curtis Books, Hollywood, Florida. 192 p. (DPL)

"The author describes wild horses and their relatives in detail--their different varieties, habitats, how they live, their prospects of survival, and also a history of those species now extinct."

Hafez, E. S. E., M. Williams and S. Wierzbowski. 1962. The behaviour of horses, p. 370-396. In: E. S. E. Hafez, The Behaviour of Domestic Animals. Williams and Wilkins, Baltimore. (DPL)

The article discusses six areas of horse behavior: ingestive and eliminative behavior, activity, social behavior, sexual behavior, schooling and training, and atypical behavior. Scientific in scope and illustrated. List of references.

Hafez, E. S. E., M. Williams, and S. Wierzbowski. 1969. The behaviour of horses, p. 391-416. In: E. S. E. Hafez, The Behaviour of Domestic Animals. Williams and Wilkins, Baltimore. (DPL)

The article discusses six areas of horse behavior: ingestive and eliminative behavior, activity, social behavior, sexual behavior, schooling and training, and atypical behavior. Scientific in scope and illustrated. List of references.

Hall, Ron and J. F. Kirkpatrick. 1975. Biology of the Pryor Mountain Wild Horse. Bureau of Land Management, Salt Lake City, Utah. Unpublished paper, 21 p. (DPL, USDI)

"Data regarding population size and dynamics, herd distribution, behavior, social structure and food habits were collected for approximately 130 wild horses in the Pryor Mountains of south-central Montana, from 1969 through 1973. The horses did not have any dominant color description, but palaminos, appaloosa and whites were totally absent. Mature females had an average weight of 600-750 pounds and mature males (5 years and older) ranged between 800-900 pounds. The hoof wall was at least twice the thickness as that of the domestic horse. There were approximately 130 horses on the range. The sex ratio was 60% male and 40% female. A 10- to 11-year-old horse was considered old. The oldest horse was 14 and the average age was 6.4 years. Survival of colts was approximately 3-4%. In 1971 the young/adult ratio was 11/100 and the young/female ratio was 24/100. In 1972 the young/adult and young/female ratios were 16/100 and 24/100 respectively. The rise in the young/adult ratio in 1971 was due to the removal of 30 adult males. The breeding season extended from late March to mid-July with peak activity in early May. The gestation period was approximately 340 days with foaling occurring from early April to July. The majority of males and females did not breed until at least three years of age. The effects of photoperiod on reproduction are unknown with respect to the female and probably play an important role in the male. Average harem

group size was 3.4. The harem was composed of a lead mare, a stud whose function was breeding and holding the unit together, and other subordinate animals. Larger harem groups sometimes contained two males and both of them bred on occasion. Males born to the unit were sometimes driven off as yearlings, while other groups tolerated young males for as long as three years. Stud groups, composed of young stallions not yet capable of obtaining a harem had a much looser organization than did the harem groups. The stud groups were led by a dominant stallion. Individual members sometimes joined other all-male groups. The horses in the Pryors had seasonal home ranges but did not establish territories. In general, distribution was dictated by availability of water and forage and weather conditions. The major items in the horses' diet were bluebunch wheatgrass (Agropyron spicatum) and sandberg bluegrass (Poa secunda)."

Hanauer, Elsie. 1973. The Science of Equine Feeding. A. S. Barnes, New York. 78 p. (DPL)

Beginning with a complete explanation of the horse's digestive system and its functions, the author delves into basic food requirements, vitamins and minerals. Factors influencing feeding principals, special cases, changing the diet, and feeding schedule are then discussed. A section on specialized diets is followed by a section covering diseases caused by faulty nutrition.

Klingel, Hans. 1965. Notes on the biology of the plains zebra Equus quagga. East African Wildlife Journal. 3:86-88. (DPL)

The author observed thirty-nine harem groups and 15 stallion groups for two years, another ten harem groups and 22 stallion groups for one year, for a total of about 500 animals. The results of the study are outlined in the following sections: social structure, seasonal distribution and foaling, foaling rate and intervals, sex ratio, and age at sexual maturity.

Klingel, Hans. 1971. A comparison of the social behaviour of the Equidae, p. 124-132. In: V. Geist and F. Walther, eds., The Behaviour of Ungulates and its Relation to Management. IUCN Publications new series No. 24. International Union for Conservation of Nature and Natural Resources, Morges, Switzerland. (DPL)

In the Equidae two types of social organization have evolved. The plains zebra (Equus quagga), mountain zebra (E. zebra),

horse (E. przewalskii) and possibly also the Asiatic wild ass (E. hemionus) live in coherent family groups, consisting of one stallion, with one to several mares and their young. Surplus stallions are found in stallion groups. The young leave their original families in a set pattern. No territories are established in these species. In the Grevy zebra (E. grevyi) and the wild ass (E. africanus) the the stallions maintain large territories which they, however, only defend under certain conditions, i.e. when an estrus mare is near the boundary. Apart from the mare-foal relationships there are no personal bonds between any two or more individuals. Most of the equine populations live in areas with marked seasonal variation. In the non-territorial species the reproductive groups migrate as units. In the territorial species the sexes segregate for part of the year, a feature which will certainly influence the reproductive rate, especially in areas with irregular rainfall.

Klingel, Hans. 1972. Social behavior of African Equidae. Zoologica Africana. 7(1): 175-185. (DPL)

Two basically different forms of social organization were discovered in the equids. Type one is represented by the plains zebra, Equus quagga and by the mountain zebra, E. zebra. Type two comprises Grevy's zebra, E. grevyi and the wild ass, E. africanus. Differences are found between these two groups in territorial and family behavior patterns. The evolution of equine sociology is discussed.

McKnight, Tom L. 1959. The feral horse in Anglo-America. Geographical Review. 49: 506-525. (DPL)

"The principal aim of the study on which this paper is based was to gather as much information as possible concerning the current distribution of feral horses in Anglo-America and the land-use problems resulting from that distribution. Most of the data were gathered by means of a questionnaire." A very thorough well-documented section on the history of the feral horse leads to the discussion, tables, and map of the present population, its problems and advantages.

Ödberg, Frank Olof. 1973. An interpretation of pawing by the horse (Equus caballus), displacement activity and original functions. Saeugetierkd Mitt. 21(1):1-12. (DPL)

The original function of pawing was as part of the nutritive and grooming behavior and as the marking of territory. Pawing

was also interpreted as displacement activity; by the sight of unreachable food, while eating, while waiting before work (racing, pulling the cart), by the stallion before serving the mare, and as part of the threat-expression.

Pellegrini, Steven W. 1971. Home Range, Territoriality and Movement Patterns of Wild Horses in the Wassuk Range of Western Nevada. M. S. Thesis, University of Nevada, Reno. 39 p. (DPL)

The unique methods of gathering data for this study included observations of such signs as tracks, hair deposits, dung piles, and shade and rubbing trees. The author studied, measured, and then drew to scale the particular hoof prints of each horse in a band. Color was determined by correlating the tracks of each animal at places where they would lose body, mane and tail hair such as rubbing trees and rolling places. Sex was determined by urination patterns and tracks close together such as a mare and a colt. Movement patterns were plotted on maps by following fresh tracks. Validity of data was confirmed by visual contact, the use of a blind, spotting scope, and aircraft. The author reported that the horses in the Wassuk range defended only a small portion of their home range as territory. Home ranges of harem groups were cube-shaped while that of lone horses was linear. There was a good colt crop and survival in 1970 but a very poor crop in the preceding ten years. The text contains a description and map of the study area plus illustrations of variation in hoof prints. Also included are discussions on dung piles and stud posts, seasonal movement changes and movement in relation to livestock use. No footnotes or list of references.

Simpson, George Gaylord. 1951. Horses: The Story of the Horse Family in the Modern World and through Sixty Million Years of History. Oxford University Press, New York. 247 p. (DPL)

A scientific survey based on a project of the American Museum of Natural History, tracing the evolution of the horse from pre-historic forms to the present. The standard reference book on horses. The book is illustrated with line drawings and has an extensive list of references.

Smythe, R. H. 1966. The Mind of the Horse. Stephen Greene Press, Brattleboro, Vermont. 123 p. (DPL)

The author, a veterinarian, describes the horse's instincts as a herd animal, and cites the adjustments it is required to make in carrying out patterns of behavior entirely opposed to its natural impulses. Then he examines the horse's sensory advantages and handicaps. His chapter on vision examines the make-up and placement of the eye in various breeds and, with the aid of excellent diagrams and photographs, explains how a horse's actions are governed by what it is able to see. Equally enlightening are his sections on equine hearing, smell and taste, tactile sensations, emotions and motivations.

Smythe, R. H. 1967. The Horse: Structure and Movement. 2nd ed. Revised by Peter C. Goody. J. A. Allen, London. 184 p. (KSU)

The author discusses the anatomic structures which are responsible for the appearance of the horse and the relationship of musculo-skeletal system to movement. The book is divided into four sections: bones and joints; skin and surface contour of the body; functions of certain parts of the horse at rest and in motion; and an appendix. Text is supplemented with illustrations.

Speelman, S. R., W. M. Dawson, and R. W. Phillips. 1944. Some aspects of fertility in horses raised under western range conditions. Journal of Animal Science. 3(3): 233-241. (DPL)

Fertility data and analysis for 209 mares bred to 14 stallions over a 15-year period at the U. S. Range Livestock Experimental Station, Miles City, Montana are given. Effects of several variables on fertility rate for these domestic horses are examined. Sex ratios of foals and causes of deaths are described.

Stecher, Robert M. 1962. Lateral facets and lateral joints in the lumbar spine of the horse--a descriptive and statistical study. American Journal of Veterinary Research. 23(96): 939-947. (DPL)

Large size in an animal poses muscular disadvantages for locomotion. In the horse and other animals this is compensated for by stiffness of the posterior spine. Stability in the horse is augmented by lateral joints in the lumbar region. These lateral joints are unique to all horses, domestic, wild, or prehistoric. The joints vary from four

to seven with the number largely dependent on the length of the lumbar spine which is dependent upon the number of lumbar vertebrae. The author examined 245 skeletons of members of the horse family and found variation in all breeds and species. The sources of skeletal material by breed and species are listed. The functions of the lateral joints are discussed. The text includes photographs and tables. Included is a summary in Spanish.

Storrar, James Andrew. 1974. Feral Horse Habitat Analysis. B. S. Thesis, University of British Columbia. (DPL)

The author discusses competition between cattle and horses in the open range and notes that although horses eat more, they are more mobile and therefore do less harm to the range. Horses that have difficulty surviving through the winter are generally those that have been worked during the summer and have not had the chance to build up body resources like the year-round feral horses. The author feels that more research is necessary, that certain branding practices be initiated, and that culling of herds be done when necessary.

Tseregmid, D. and A. Dashdorj. 1973. Wild horses and other endangered wildlife in Mongolia. Trans. by Hon. I. Montagu. Oryx. 12(3): 361-370. (DPL)

"Until the middle of the present century Mongolia was little affected by man, in the sense of interference with and distortion of the natural environment. In 1918 the population of this 600,000 square-mile country was only 640,000, with 9.6 million domestic animals. (The comparable figures today are 1,300,000 and 23.4 million.) Thanks to this lack of interference and the protective measures of the Mongolian People's Republic, Mongolia still has some of the rarest of the world's mammals, notably wild horse and camel, Gobi bear and Asian wild ass. The most threatened of them is the Przewalski horse, which some scientists think is extinct. But the two authors believe that it survives in small numbers. They urge the need for large reserved areas where livestock, which compete for the horses' grazing and water, can be eliminated."

Tyler, Stephanie J. 1972. The behaviour and social organization of the New Forest Ponies. Animal Behavior Monographs. 5(2): 85-196. (DPL)

The author spent a total of 3948 hours observing the actions and behavior of the New Forest ponies during the years 1965

to 1968. The New Forest covers an area of 144 square miles in Britain of which 103 square miles are under public ownership. The ponies are believed to be descendants of small wild horses indigenous to Britain and are semi-wild; except for the annual harvest of young animals and the control of stallion numbers they remain free to forage for themselves throughout the year. Particular attention was paid to the structure and stability of the groups, the dominance-subdominance relationships within and between groups, and the relationships between mares and their foals. Observations were also recorded on the daily maintenance activity of the ponies such as grazing, resting, grooming and elimination.

Waring, G. H. 1970. Perinatal behavior of foals (Equus caballus). Paper read before the 50th Annual Meeting of the American Society of Mammalogists. June 18, 1970. (DPL)

"Rapid behavioral development of the horse does occur relative to many mammalian species. It is possible in the first few hours of life of a foal to detect abnormalities by observing deviations from typical patterns in behavioral development."

Waring, G. H. 1970. Primary socialization of foals (Equus caballus). Paper read before the Animal Behavior Society at the 21st Annual American Institute of Biological Sciences meetings. Bloomington, Indiana, August 29, 1970. (DPL)

"Although many questions are yet to be answered, horses seem to establish primary socialization in the first two hours after parturition. The foal's bond to its mother remains weak relative to the mare's bond to her foal."

Waring, G. H. 1971. Sounds of the horse (Equus caballus). Paper read before the meeting of Ecological Society of America. September 21, 1971. (DPL)

"Horses produce a variety of sounds. Among these are squeals, nickers, whinnies, groans, blows, snorts, snores, and sounds associated with coughing, chewing, flatus, hoof beats, and sheath movements. Many, if not all, could act in information transfer between horses and facilitate social interactions. Furthermore because of the symbiotic relationship between man and horse, the sounds of the horse function at times in inter-species communication aiding in transfer to a human handler information about the emotions of the horse, thus facilitating the symbiotic relationship."

GENERAL

Anonymous. 1958. Abandoned horses on the federal range. Our Public Lands. 8(2):3, 12. (DPL)

The origin of wild horse herds prior to the Taylor Grazing Act of 1934 started with their introduction by the Spanish. Later after their numbers were depleted in World War I, because many were rounded up for cavalry use, their numbers grew again as ranchers turned them loose because power equipment had replaced many of their functions. The wild bands competed with licensed livestock and game animals for forage. "The only way these horses can be controlled is through organized roundups, conducted under the abandoned and estray animal statutes of the states." The article goes on to describe different methods of rounding up wild horses. Concern for the extinction of wild horses has prompted some people to suggest that refuges for them be established. The Bureau of Land Management points out that this might not be practical because they are constantly moving long distances in search of food and forage and they might still compete with other forms of wildlife and domestic stock. The Bureau feels that if extinction of the wild horse were a possibility, some form of public protection would be given them.

Anonymous. 1960. Canada: 'Please don't kill...'. Newsweek. 13 June: 54. (DPL)

The Canadian Sable Island horses are discussed. Due to their starving condition the Canadian government decided that they should be sold, a public uproar ensued, and their future is still undecided.

Anonymous. 1968. The vanishing mustang. Colorful Colorado. 4(1):18-22. (DPL)

The article opens with a description of a present-day airborne roundup. The author goes on to discuss the locations of the remaining wild horse population and the problems they are faced with such as fences, sheepherders and cattlemen. The article closes with a summary of the history of the wild horse in this country.

Anonymous. 1971. The fight to save wild horses. Time. 12 July: 48-51. (DPL)

Recent roundups of mustangs are discussed giving the techniques used. Photographs accompany the text. Recent efforts of Mrs. Velma Johnston ("Wild Horse Annie") have resulted in legislation being passed. But the article points out that ranchers have found a loophole in the law and by releasing their branded horses among the wild horses they are allowed to round up the entire mixed herd. New legislation in Congress would outlaw such capture techniques and would provide much tougher protection for the wild horses.

Anonymous. 1972. Champion of the wild ones. Kappan. 2(2):17-19. (DPL)

A brief history of wild horses in the United States and a general overview of Mrs. Velma Johnston ("Wild Horse Annie") and her efforts to save the wild horses.

Anonymous. 1974. The mustang hunters. Newsweek. 22 April: 78. (DPL)

The article discusses several problems that have arisen because of the 1971 Wild Horse and Burro Act. A 20 percent increase in wild horse population is said to be the result of protection afforded by the 1971 Act and is cited as having angered cattlemen because their cattle must compete with the horses for forage. Another problem is that ranchers are rounding up wild horses to sell using part of the Act which allows owners of stray horses on public lands to recapture them.

Amaral, Anthony. 1965. The wild horse of Nevada. Nevada Highways and Parks. Spring: 16-21. (DPL)

According to the author the population of wild horses in Nevada fifty years ago was 100,000. Today, the author says that Nevada is the only state that has herds of wild horses that are remainders of these large herds. Mustanging as a sport and famous mustangers are discussed followed by a general history of wild horses in this country and a recent history of wild horses in Nevada.

Amaral, Anthony. 1970. Cinderella horses. Horse Lover's Magazine. 34(5):40, 56. (DPL)

Melvin Jones, a rancher in eastern Nevada has been capturing and converting mustangs into useful cow horses for some years. One of his Cinderella horses was Smartie--who was captured from a wild herd in central Nevada and rose to become champion reined cow horse in the Olympics of that contest at the Cow Palace in 1952. Mr. Jones describes how he brings a mustang along from wild horse to completed reining horse.

Bearcroft, Norma. 1966. Wild Horses of Canada. J. A. Auen, London. 89 p. (DPL)

A popularized book dealing with wild horses in Canada, covering the introduction of the horse to the western world in the fifteenth and sixteenth centuries and the use of the horses by Indians and cowboys. The Sable Island Refuge is discussed in detail. Several interesting aspects of the Sable Island horses are that they are less than 14.2 hands high and the herds remain in one or two valleys for their entire lifetime. The common herd size is a stallion with six mares and foals. More than one stallion per herd is common in the winter months. The legal means for rounding up wild horses in Alberta are outlined.

Beebe, B. F. and J. R. Johnson. 1964. American Wild Horses. David McKay Company, Inc., New York. 180 p. (DPL)

A juvenile book explaining many aspects of the lives of wild horses and burros including how they can be utilized after capture. The book is illustrated with line drawings.

Bell, Carol. 1972. 'Jupiter' meets civilization. Contemporary, The Denver Post. 7 May: 22-24. (DPL)

The story of a Pryor Mountain colt culled from the herd and adopted into a new home. The article discusses how the colt is progressing with the new owner.

Boone, Andrew R. 1933. The wild herd passes. Travel. 60(4): 20-23, 56. (DPL)

A general article important because of its date. The author estimates the population of wild horses to be 50,000 in 1933. Wild horses are praised for their stamina and comments are made on their grazing habits. The article also discusses

horses' need for water and their ability to dig for water if necessary.

Boyd, Bob. 1973. Wildest of the wild. American Horseman. 3(7): 18-20, 39-40. (DPL)

The author describes the wild horse of today mentioning heritage and history. He discusses his experiences as a wild horse hunter.

Chesson, Ray. 1969. Haylift for hungry broomtails. Our Public Lands. Summer: 5-7. (DPL, USDI)

The story of a haylift to starving wild horses in Nevada organized by the National Mustang Association with the help of the International Society for the Protection of Wild Horses and Burros and the U. S. Air Force.

Crain, Carolyn. 1973. Saving the Symbol of the West: The Wild Horses. Unpublished bibliographic essay. 18 p. (DPL)

A discussion of the wild horse, concentrating on the struggle and the controversies surrounding the campaign for federal protection of the remaining 11,000 wild horses in the ten western states. Well documented.

Davis, Deering. 1962. The American Cow Pony. Van Nostrand, Princeton, New Jersey. 166 p. (DPL)

An authoritative book divided into sections covering the following subjects: the various breeds of horses involved in the development of the American cow horse, starting with the Spanish horse, conformation, size and intelligence, riding, schooling, equipment, and the cutting horse. List of references.

DeFilippo, Florence. 1970. A plea for the wild horses. Horseman's Yankee Pedlar. 8(11):92-93. (DPL)

The article discusses the estimated 17,000 wild horses which occupy public lands and how they are being hunted for sport or slaughtered for dog food which brings four cents a pound. The need for protective legislation is outlined.

Dobie, J. Frank. 1951. The murderous mustang of the plains. Saturday Evening Post. 1 December:32-33, 130, 132. (DPL)

An exciting account of an encounter with a wild stallion is followed by a brief history of wild horses on the Western range. Dobie outlines the typical behavior of a band of horses and recounts many of his experiences with wild horses and observations he made during these experiences.

Dobie, J. Frank, Mody C. Boatright and Harry H. Ransom, eds. 1965. Mustangs and Cow Horses. 2nd ed. Southern Methodist University Press, Dallas. 429 p. (DPL)

An extensive and informative compilation on mustangs and mustangers which covers a wide and selected assortment of material on the range horse in general. It also contains many fresh first-hand chronicles. Selections include: Mustang Texas, Mustangs of the Staked Plains, Legendary Wild Horses, Caballos, A-Riding and A-pitching, A Man and His Horse, and Horse Heroes.

Gorman, John A. and Gaydell M. Collier. 1972. Free as...the wind. National Wildlife. October, November:46-48. (DPL)

The article discusses wild horses and says they are neither livestock nor wildlife, but feral; that is, domestic animals which have reverted to the wild. Mustangs are small, tough animals, standing between 13 and 14 hands high and weighing about 900 pounds. The early history of the horse in North America and the impact of the Taylor Grazing Act are discussed. The Nevada preserve for wild horses and the Pryor Mountain Wild Horse Range are the only two areas where these horses are protected. Many of the steps made towards the protection of wild horses have been through the efforts of Mrs. Velma Johnston ("Wild Horse Annie").

Henry, Marguerite. 1966. Mustang; Wild Spirit of the West. Rand McNally, Chicago. 224 p. (DPL)

The author presents the early history of the horse in the West and a biography of Mrs. Velma Johnston ("Wild Horse Annie") and her fight to preserve the wild horses of the West. A young adult book.

Henry, Marguerite. 1969. Dear Readers and Riders. Rand McNally, Chicago. 221 p., illus. (DPL)

In this book the author answers letters inquiring about the reality behind her fiction and her riding and writing problems. An entire section is devoted to questions concerning her book Mustang; Wild Spirit of the West. A young adult book.

Horseman's Abstracts. 1969-1971. Vols. 1-3. Leisure Abstracts, Goleta, California. Joan M. Ingalls, ed. (CSU)

An abstracting service of more than 50 popular horse-oriented magazines. Some references to Spanish mustang and wild horses are made but the large bulk of material abstracted concerns breeding, racing, and general horsemanship. "The function of Horseman's Abstracts is to describe and summarize the content of current magazine articles, so that the reader can decide whether he is interested in reading the original article."

Isaman, Judy. 1973. Wild mustangs. Nevada Highways and Parks. Winter:20-25. (DPL)

An article about Richard Jeffries, a Nevada biologist, who studies and photographs wild horses in northern Nevada as a hobby. Some of Mr. Jeffries general observations are noted and the text is accompanied by his color photographs of wild horses.

Jackson, Donald. 1969. Mustangs. Life. Jan. 17:42-54. (DPL)

A photographic essay, including an interview with Robert Brislawn, who has been breeding mustangs in Wyoming since the 1920's. Also includes comments of many westerners and the remarks of Mrs. Velma Johnston ("Wild Horse Annie"), who has worked for protective legislation for the wild horses.

Kania, Al. 1974. Wild and free roaming. American Horseman. July:24-25, 45. (DPL)

The author raises the question of the feral U. S. wild horse designation. He suggests that there may have been horses here before the Spanish arrived with their horses. He concludes that the present wild horse population is descended not only from feral animals but also from native horses.

King, Chuck. 1971. A realistic look at the mustang - wild horse situation. Western Horseman. 36(5):44-45, 156, 158. (DPL)

The author states that the original mustangs came from domesticated horses turned wild and that it is unrealistic to try to trace any of the wild horses of today directly back to the stock brought to this country by the Spaniards. To support this conclusion the author discusses horse ranching and breeding illustrating how horses were bred and as a result how there could be no pure-blooded Spanish horses left in the wild. A need for present-day preserves for the wild horses is discussed.

Laune, Paul. 1964. Mustang Roundup. Holt, Rinehart and Winston, New York. 154 p. (DPL)

The author grew up in Woodward, Oklahoma and had a great deal of experience with mustangs in his youth. There is much horse lore in this book and the role of mustangs in developing the West is entertainingly set forth. Illustrated with drawings by the author. Suitable for young adults and adults alike.

Libman, Joan. 1975. A battle in Nevada may decide the fate of the wild horse. Wall Street Journal. 4 August: 1, 7. (DPL)

Wild horses rounded up by the Bureau of Land Management to be put into "foster homes," are being fought over because the State of Nevada claims that the federal government has no jurisdiction over them. The article highlights the various stands of environmental groups, ranchers, and wild horse societies.

McArthur, J. Wayne. 1973. The wild horse: an asset or a liability: Western Horseman. 38(6):16-17, 140, 142-143. (DPL)

The author, who spent many years running wild horses in Wyoming, comments on the Wild Horse and Burro Act of 1971. He predicts that the law will allow herds to multiply at a very fast rate and that the result will be starvation as a means of population control. He also cites problems of inbreeding resulting in poorer and poorer horse specimens because of the pairing of undesirable recessive genes. A need for research is stressed.

McGriff, Sue. 1969. The wild stallion in fact and fancy. Chronicle of the Horse. 32(30):26-27. (DPL)

This is an appraisal of the mustang stallion's conformation, behavior, and coloring. Their background is described. The article is illustrated with pictures of three registered Spanish mustangs.

McKnight, T. 1959. The wild horse today. Desert. 22(6):7. (DPL)

A general distribution map shows where the majority of wild horses were found at the time of the author's study. He says that they run in small herds of from five to fifteen in remote back country. They are described as runty, big-headed and coarse with agility and stamina. They do not significantly compete with other fauna and their only natural predator is man. The author expects their numbers to dwindle to several thousand.

Moore, Ron. 1969. Mustangs. Western Horseman 34(5):111, 232-233. (DPL)

The author's observations of bands of wild horses in Nevada.

Most, Charles E. 1971. Somebody cared. Our Public Lands. Spring:12-13. (DPL)

The story of the first horse officially belonging to the United States, named "Wild Horse Annie." The horse is a foal from the Pryor Mountain Wild Horse Range in Wyoming and was rescued from starvation by Bureau of Land Management personnel.

O'Brien, Robert. 1957. The mustang's last stand. Reader's Digest. December: 188-192. (DPL)

A brief description of the history of wild horses in this country including a section on horse lore. Present efforts to protect wild horses by people such as Verne Wood, Edward Gladding and Mrs. Velma Johnston ("Wild Horse Annie") are outlined.

Pady, Donald Stuart, comp. 1973. Horses and Horsemanship: Selected Books and Periodicals in the Iowa State University Library: An Annotated Bibliography. Iowa State University Library, Ames, Iowa. 226 p. (CSU)

"The annotated bibliography describes nearly 800 titles selected from an estimated 1,200 books and periodicals about horses, covering works that range from those published as early as 1475 through recent titles of 1972 held by the University Library. Descriptive annotations accompany each title." Subjects covered are: bibliographies, history, breeding, medicine, horseshoeing, riding and racing, sports and hunting, and horses in art and fiction. Valuable for the early material covered and unavailable in most other places.

Rhodes, Richard. 1972. How the West was lost. Esquire. May: 150-155, 184, 187, 188. (DPL)

Some of the battles Mrs. Velma Johnston ("Wild Horse Annie") has fought for wild horses are detailed and there is a general account of how Annie became involved in the battle to save wild horses. The author outlines his reasons for thinking that wild horses are declining as the buffalos declined 50 to 75 years earlier.

Ryden, Hope. 1970. America's Last Wild Horses. Dutton, New York. 311 p. (DPL)

A history of America's horses, from origin to original extinction, reintroduction by the Spanish, use by the Indians, up to the present, including commercial exploitation and lack of protection. The author describes the political struggle for and against protection of herds and gives opinions on steps necessary to prevent the extinction of wild horses today.

Ryden, Hope. 1971. Good-by to the wild horse? Reader's Digest. May: 227-232. (DPL)

The author, a television documentary producer, first became interested in wild horses in 1968 when she went to the Pryor Mountains in Wyoming. She describes the habits of the horses she filmed and gives background information on the recent history of the wild horses and summarizes what is being done to protect them. She stresses that new legislation must be passed if they are to remain and not be lost forever.

Ryden, Hope. 1971. On the track of the West's wild horses. National Geographic. 139(1):94-109. (DPL)

The author describes the area in which wild horses live and outlines her own experiences with wild horses. The Bureau of Land Management believes that on public lands on which wild horses live about 17,000 of the animals survive. Illustrated with many of the author's photographs.

Ryden, Hope. 1971. Mustangs: A Return to the Wild. Viking Press, New York. 111 p. (DPL)

The sentimental journey of a woman tracking with a camera the few wild horses left in the West. Interesting text accompanied with photographs.

Ryden, Hope. 1972. The Wild Colt; the Life of a Young Mustang. Coward, McCann & Geoghagen, Inc., New York. n.p. (DPL)

A children's book explaining the life of a colt in a wild horse band. Profusely illustrated with the author's photographs.

Sampson, Arthur W. 1952. Range Management: Principles and Practices. J. Wiley, New York. 570 p. (DPL)

This book is divided into four parts. Part one deals with general concepts, world practices and problems, physiological principles and plant ecology as applied to range problems, characteristics of U. S. grazing lands and the historical development of grazing in America. Part two discusses forage plants as a basis of range production. Part three discusses improvement and management, natural and artificial reseeding, control of noxious woody plants, selection and control of the various kinds of livestock, standards of range use, range inventories and management plans, economics and physical and social aspects. The fourth and final part considers the protection of the land resources and range livestock, including timber reproduction, the use of shade trees and shelter belts, stock-poisoning range plants, foraging and predatory wildlife on the range, soil erosion and control and the general administrations of the public lands. Extensive references throughout.

Sinclair, John L. 1971. The mustangs of Lucero Mesa. New Mexico. Winter: 4-13. (DPL)

A discussion of the McKinley Ranch mustangs that live on Lucero Mesa in New Mexico. An account of these Andalusian mustangs and their Old World heritage is followed by a discussion of how they got to the New World and how they dispersed into New Mexico. The Spanish Mustang Registry and mustangs on the McKinley Ranch are mentioned.

Smith, Charles Hamilton. 1841. Feral horses of America, p. 173-185. In: Charles Hamilton Smith, The Naturalist's Library. Mammalia. Vol. XII. Horses. W. H. Lizars, Edinburgh. (DPL)

A valuable account of wild horses as they were known to the author in 1841. The South American wild horses are 90% bay and 10% zains in color. Their only predators are the puma and jaguar. If a carnivorous animal is detected by a wild horse herd they crowd together and then the stallions rush forward to trample him to death. The wild horses of the Western United States congregate in thousands because of the great abundance of food. These herds belong exclusively to the prairie, avoiding mountains and woods.

Spencer, Dick. 1959. Plight of the mustang. Sports Afield. December: 28-29, 91. (DPL)

The mustang of the West has been pushed into the most undesirable grazing areas available. A result of this poor grazing is a small and scrubby physical appearance. The efforts of Mrs. Velma Johnston ("Wild Horse Annie") to prevent motorized vehicles from being used to round up horses have resulted in Federal legislation forbidding their use. The author recommends the establishment of wild horse refuges and thinning herds on these refuges as necessary.

Stoddart, Laurence A., Arthur D. Smith and Thadis Box. 1975. Range Management. 3rd ed. McGraw-Hill, New York. 532 p. (DPL)

"Defining the science of range management and presenting the principles that are basic to the management of rangeland ecosystems, this text has become a classic in its field. The new edition now includes worldwide examples. Rangeland resources are identified, and important principles in the fields of plant physiology, ecology, economics, and animal nutrition are related to the management of rangelands. The authors discuss multiple uses of rangeland, including

wildlife, water, forestry and soil stability. Principles and practices of manipulating vegetation are presented, including both chemical manipulation and biological controls." - McGraw-Hill

Thomson, David. 1972. One final fight for America's wild horses. True; The Man's Magazine. February: 27-29, 33, 82-85. (DPL)

The author investigates wild horses in the Douglas Mountain area of Colorado. He interviews two veteran ranchers in the area who feel that the new federal law will cause them hardship because of the multiple use concept of sharing leased land with wild bands of horses. According to one of the ranchers, if the law means that ranchers would lose their grazing permits then there is a possibility that ranchers would shoot the horses whereas in the past they protected them because they could occasionally catch them and sell them to ranchers. An historical account of the wild horses and the author's first-hand account of seeing wild horses in the Douglas Mountain area conclude the article.

Trueblood, Ted. 1975. Disaster on the western range. Field and Stream. 79(9):14, 22-23. (DPL)

The author feels that the Wild Horse and Burro Act of 1971 needs to be amended to give range managers adequate means to control these animals. If not amended the author points to the following five results which will ensue: extermination of two endangered species; the Sonoran pronghorn and the desert bighorn sheep; devastation of forage plants essential to both domestic livestock and big game; damage to watersheds; bankrupting of ranchers; and eventual decimation by starvation and disease of the horses and burros themselves. In light of this the author goes along with the recommendation of the majority of the members of the Wild Horse Advisory Board that aircraft be used to control the growing numbers of horses. Examples of substantial increases in horse populations are cited as reasons for allowing the administrators of the range, i.e. the Bureau of Land Management and Forest Service, more control over the numbers in the herds.

U. S. Department of the Interior. 1973. In Touch with People, U. S. Department of the Interior Conservation Yearbook Series No. 9. "Free Spirit on the Move." p. 83-87. U. S. Government Printing Office, Washington, D. C. (DPL)

A capsulized summary of how horses got to the New World and their history since then. Emphasis is placed on recent

aspects of the wild horse problem and what has been done for them. A thorough discussion of the Pryor Mountain wild horses.

U. S. Department of the Interior. Bureau of Land Management. n.d. Fact Sheet: Wild Horses. 1 p. (DPL)

A short fact sheet, answering questions about wild horses such as: what and where they are located; how they got there; how many there are; what is being done for them; and the Bureau of Land Management's policy on them.

U. S. Department of the Interior. Bureau of Land Management. 1974. Wild Horses in Colorado 1974. 7 p., 2 maps. mimeo. (DPL)

The maps show the locations of the horses. A table shows the breakdown within each area of numbers of mares, colts, yearlings, harem studs, studs and unidentified horses. A 20% increase in horse population occurred from 1973 to 1974. The statistics were gathered by airborne surveys.

Varner, Carroll. 1974. Velma Bronn Johnston (Wild Horse Annie). Unpublished bibliographic essay. 11 p. (DPL)

The author discusses the life of Mrs. Velma Johnston ("Wild Horse Annie") and what she as an individual has accomplished for wild horses. List of references.

Walter, Beverly. 1959. Wild Horse Annie fights to save the mustang. Desert Magazine. June: 4-7. (DPL)

This article outlines the early phases of the wild horse controversy and Mrs. Velma Johnston's ("Wild Horse Annie") involvement.

Weiskopf, Herman. 1975. Wild West Showdown. Sports Illustrated. 42(18):82-88, 91-92, 94. (DPL)

The author interviewed Mrs. Velma Johnston ("Wild Horse Annie") at her home in Reno, Nevada. The author's account of Mrs. Johnston's life gives an up-to-date historical picture of her efforts and other efforts to preserve and protect wild horses. The victories and setbacks of the struggle are outlined. Particular attention is paid to legislative issues

concerned with wild horses. Personal anecdotes about Mrs. Johnston's life are found throughout the article.

Westin, Jeane. 1971. "Wild Horse Annie" madonna of the mustangs. Horseman. May:62-64. (DPL)

The story of Mrs. Velma Johnston ("Wild Horse Annie"), how she got interested in wild horses and what she has done to further their cause.

Wood, Nancy. 1969. The wild horses--heritage or pest? Audubon. November: 46-51. (DPL)

The article discusses why cattlemen and Bureau of Land Management officials find wild horses free loaders in federal and private lands. Horses produce no profit like big game do, therefore it is most expedient to get rid of them. The 435,000-acre wild horse preserve on Nellis Air Force Base in Nevada and the Pryor Mountain Preserve along the Montana-Wyoming border are the two areas where horses are protected. The total number of wild horses remaining in the U. S. is estimated to be 17,300 by the Bureau of Land Management. The early history of horse roundups by western cattlemen, roundups during World War I, and roundups in the 1920's are outlined. The population of wild horses in 1925 was said to have been one million and by 1930 it was estimated that the population had dropped to around 100,000.

HISTORY

Clark, L. H. 1966. They Sang for Horses: The Impact of the Horse on Navajo and Apache Folklore. University of Arizona Press, Tucson. 225 p. (DPL)

A small illustrated folio volume exploring the impact of the horse on Navajo and Apache folklore. Very soon after the horse was introduced to the Navajos and Apaches in the early part of the seventeenth century it quickly became the main source of wealth among these primitive peoples and exercised a dominant influence over their cultures. This dominant economic influence naturally became infused with the regional folklore. Discussion of Indian veterinary efforts with horses and of their equine husbandry. The work contains color reproductions of illustrations made by famous Indian artists.

Cook, J. H. 1919. Wild horses of the plains. Natural History. 19:104-110. (DPL)

A former Indian scout recalls his experiences with wild horses as well as Indian knowledge which was passed on to him. He describes the horses of 1870 and 1880: "the average weight was about 800 pounds, the colors that predominated among them were cream, buckskin, or mouse-color, they had a few black stripes about the legs above the knees, or hocks, and a black stripe along the middle of the back, extending from the mane to the tail, the stallions did not have a shaggy appearance." A predator of the weakened animals and colts was the wolf. Early capture techniques are mentioned.

Crowell, Pers. 1951. Cavalcade of American Horses. McGraw-Hill, New York. 311 p. (DPL)

A background of how man developed the horse from a wild, untamed animal to its present high degree of usefulness. The author discusses the horse not only as a close companion to man but as one of the most useful animals in the advance of civilization. The book covers history and legend as well as the story of individual breeds.

Denhardt, Robert Moorman. 1975. The Horse of the Americas. University of Oklahoma Press, Norman, Oklahoma. 286 p. (DPL)

The narrative tells something of the history of the western horse and the part he has played in the development of the Americas.

Dobie, J. Frank. 1952. The Mustangs. Little, Brown, Boston. 376 p. (DPL)

A highly anecdotal history of the wild horses of the American West, examining the theories of their origin, and relating incidents of their capture and use by both Indians and whites. A comprehensive presentation of the horse's introduction, spread, influence, zenith and disappearance. Thorough documentation and extensive list of references.

Haines, Francis. 1964. How the Indian got the horse. American Heritage. 15(2):16-21, 78-81. (DPL)

The author outlines the two theories on how the Indian got the horse. The earliest theory was that horses lost from early Spanish expeditions had, by natural increase, stocked the western ranges with wild bands that supplied the various Indian tribes with their animals. The more recent theory, based on historical evidence, is that the Indians gradually got horses from the Spanish and later from each other and not from free-roaming bands.

Haines, Francis. 1971. Horses in America. Crowell, New York. 213 p. (DPL)

A popular historic survey on the various types of horses found and bred in America for different purposes. The early history of the horse in America and how it spread is outlined. A modest list of references.

Howard, Robert West. 1965. The Horse in America. Follett Publishing Company, Chicago. 298 p. (DPL)

A brief survey of the role of the horse in North American culture and history. The author carries the story from Eohippus up to today's leisure-time riding and racing horses. He discusses the roles of Conquistadores, Indians, the military, cattlemen, and various other groups in the horse's history in this country.

Hunt, F. and R. Hunt. 1949. Horses and Heroes; the Story of the Horse in America for 450 Years. Scribner, New York. 306 p. (DPL)

This book concentrates on the Spanish horse, its influence and contribution to the American way of life from its earliest arrival on the continent to the present.

Hunt, John Clark. 1972. The wild horses. Westways. September: 24-29, 79. (DPL)

Early maps of the West detail where wild horses were once found. The name Wild Horse was applied to springs, mountains, canyons, flats, lakes, points, ridges, creeks and mesas. The early relationships of horses to settlers and Indians are documented by the writings and experiences of early explorers such as Pete Barnum, a famed mustanger who caught more than 15,000 mustangs between 1904 and 1914 and was the inventor of the circular canvas horse trap. The article closes with a discussion of current legislation that has been passed to protect the wild horses.

Johnson, J. J. 1943. The introduction of the horse into the Western hemisphere. Hispanic American Historical Review. 23(4):587-610. (DPL)

A well-documented article tracing the horse's arrival in the New World. The author states that second voyage brought horses to Espanola in the New World, they were later dispersed to Puerto Rico, Jamaica and Cuba. There is a thorough discussion of the types of horses that were brought from Spain as well as the ancestry of these horses.

Roe, Frank Gilbert. 1955. The Indian and the Horse. University of Oklahoma Press, Norman, Oklahoma. 434 p. (DPL)

"This is a carefully documented account of the Indian pony, that hardy little animal which, despite its "hang-dog" appearance and apparent lack of intelligence, possessed an almost unbelievable speed and endurance which allowed its rider to run down the fastest buffaloes in the herd or leave his cavalryman pursuer far behind. It is also the story of the American Indian and his relation to this animal which broadened his horizons and developed his abilities as horse master and selective breeder, even though he had previously known only the dog as a domesticated creature. But more than this, it is a historical comment on one of the most turbulent and fascinating eras of American frontier history."

Schuessler, Raymond. 1970. When the Indian got the horse! Horse World. 37(11):66-67, 137-138. (DPL)

Some contemporaries considered the American Indian among the world's best horsemen, led by the Sioux and Comanche tribes. The author examines the many ways in which possession of the horse changed the social structure of the Indian culture. He

quotes reports from the Spanish and from Indian tribes. The remarkable stamina of these horses and the Indian methods of horse training are discussed. These ranged from riding out the bucks to very gradual gentling methods.

Smith, Bradley. 1969. The Horse in the West. World Publishing Company, New York. 255 p. (DPL)

The author, a photographer for "Life" and other magazines, has chosen four breeds to represent the horse in the West: Arabian, Thoroughbred, Quarter Horse, and Appaloosa. He gives a separate section to each breed, covering history, legend, development of the breed in the West, qualities and conformation, and a modern view that concentrates on a few ranches and breeding farms. Each block of text is followed by a picture essay of the breed with color photographs showing the breeds of today. The book also includes a history of Western horses since the time of Columbus, picture essays on the horse in art and the wild horse of the Pryor Mountains, Wyoming, and a map showing the spread of the horse through the West.

Wissler, Clark. 1914. The influence of the horse in the development of the Plains culture. American Anthropologist. 16(1): 1-25. (DPL)

A discussion of the relation of the European horse to the culture of the Plains Indians. A general resume of the literature at hand provides approximate dates of horse introduction into various tribes and is followed by a comprehensive section on the means through which the Indians acquired the horse. The author covers tribal customs and habits and their relation to the introduction of the horse. An example of this is the migration habits of tribes before and after the horse became a part of their culture. Thoroughly documented.

Worcester, D. E. 1944. The spread of Spanish horses in the Southwest. New Mexico Historical Review. 19:225-232. (DPL)

This article expounds the generally accepted theory that the Plains Indians did not acquire horses through strays being lost by Spanish expeditions, as has been suggested by some writers, but rather that Spanish ranches supplied both the horses and the horsemanship to the Indians of the Southwest. There is nothing to suggest that there were mounted Indians in the Southwest before the 17th century, nor any reason to

believe that the natives of that region learned to use horses except from the Spaniards. Well documented.

Worcester, D. E. 1945. Spanish horses among the Plains tribes. Pacific Historical Review. 14:409-417. (DPL)

This article theorizes that the northward spread of the use of horses was from tribe to tribe and man to man rather than capture from roaming herds. It is possible that wild horses may have entered some sections of the Plains in advance of the knowledge of horsemanship, but there is no evidence of any tribe learning to use horses except from horsemen of other nations. The Indians acquired considerable knowledge of horsemanship and knew which horses to use for war expeditions based on hoof features.

Wyman, Walder D. 1945. The Wild Horse of the West. Caxton Printers, Caldwell, Idaho. 348 p. (DPL)

This book places primary emphasis on events since 1890, but goes back to the original introduction of horses by the Spanish. It maintains that distribution of horses to Indians was primarily by means of northward movement of Spanish strays. It details the influence of horses on Indians and stockmen up to the present time.

Zeuner, Frederick E. 1963. The horse, p. 299-337. In Frederick E. Zeuner, A History of Domesticated Animals. Hutchinson, London. (DPL)

A definitive coverage of the earliest known domestications of the horse, concentrating on its development in different geographical areas. The article is scientific and well documented with an extensive list of references.

LEGISLATION

Anonymous. 1959. Good news for the mustang: President signs Baring Bill. Desert Magazine. November: 4. (DPL)

The article discusses the passage of the anti-airborne roundup law, popularly known as the Baring Bill. This law prohibits the mechanical capture of wild horses and burros on public land. The bill also makes it illegal for pet food suppliers to pollute desert water holes. The fine for violating this law is $500 and/or six months in jail. Mrs. Velma Johnston's remarks on this news are included.

Anonymous. 1959. Wild Horse Annie. Time. 74(4):15. (DPL)

A discussion of the pending legislation concerning airborne roundups and how Mrs. Velma Johnston ("Wild Horse Annie") has been the champion of the wild horse cause.

Anonymous. 1971. California wild horses. Chronicle of the Horse. 34(22):32. (DPL)

State Senator Beilenson of California introduced a bill prohibiting exploitation of threatened wildlife, which he recently amended to include wild horses. The bill was introduced to discourage the practice of trapping and killing Nevada mustangs for commercial purposes. Importation of wild horses to California slaughter houses is now against the law.

Anonymous. 1971. They kill horses...don't they. Colorful Colorado. May, June:4R-6R, 8R, 10R, 12R, 14R, 16R. (DPL)

The Colorado House Agriculture Committee voted unanimously to indefinitely postpone action on a wild horse protection bill that had passed overwhelmingly in the Senate. As a result the year-round open season on wild horses remains in effect. The early history of the horse in the new world is mentioned, including early capture techniques such as creasing, which meant shooting the horse in the withers, which would stun him until he could be roped. The recent decline of the wild horse is discussed along with the efforts of Mrs. Velma Johnston ("Wild Horse Annie"), to save them for future generations.

Anonymous. 1974. Wild horse rights: return of the mustangs. Colorado Business. 1(4):23-24. (DPL)

The article discusses the Wild Horse and Burro Act of 1971. According to the Act, November 15, 1974 was the last date private citizens could claim wild horses. They now all belong to the United States. The Bureau of Land Management is now authorized to take a census of the herds in given localities and to allocate each herd enough land to sustain it. Ranchers are distressed because in some cases they must now share leased federal land with wild horses and they are forbidden to round up wild horses to sell to rendering plants.

Barber, Ted. 1974. Wild horses on welfare. Western Horseman. April:80-84, 161-162. (DPL)

The author confronts the Wild Horse and Burro Act of 1971 (PL 92-195) and says that allowance must be made for air-borne roundups for good management practice.

Brandon, William. 1972. Wild horses of the West. Sierra Club Bulletin. September:4-10, 37. (DPL)

A discussion of why the Wild Horse and Burro Act of 1971 was passed overwhelmingly and why wild horses have claimed so much recent attention and publicity. The history of the horse starting with the Spanish is chronicled to its gradual disappearance in the 20th century. The efforts of Mrs. Velma Johnston ("Wild Horse Annie") are outlined. The author calls attention to the necessity for a serious study of wild horse habits. He claims that wild horse refuges or reserves, several of which have been established in recent years, are only a partial solution to the problem.

Jennings, Josh. 1972. Wild Horse Annie: a western legend. High Country News. 4(26):4-5. (DPL)

The author interviews Mrs. Velma Johnston ("Wild Horse Annie"). The interview is a personal account of her efforts to protect wild horses. The specific steps that were taken towards getting legislation passed for the protection of wild horses are outlined.

Johnston, Velma B. 1970. Legislation requiring immediate action. Northeast Horseman. April:7-8. (DPL)

Mrs. Velma Johnston ("Wild Horse Annie") urges legislation to protect and control wild horses and burros. She feels they

are the target of exploitation, starvation and slaughter and cannot be saved through slow step-by-step procedures. At the end of the article is the bill which she wishes introduced in the Senate. She urges that all horse lovers write to Senator Henry M. Jackson and urge him to schedule early hearings on Bill S-3358 for the protection of wild horses and burros.

Johnston, Velma B. 1970. Mustang protective legislation. Chronicle of the Horse. 33(51):11. (DPL)

Hunters are getting around laws against capturing wild horses and burros with airplanes and mechanized means by turning domestic horses out on the range, then wild horse hunters may chase the mixed herd of wild and domestic horses by any means, claiming ownership of the animals. Mrs. Velma Johnston ("Wild Horse Annie") urges support of law S-3358 introduced by Senator Hansen of Wyoming which would remove jurisdiction over the animals from state and local agencies to the federal authorities.

Johnston, Velma B. 1972. The fight to save a memory. Texas Law Review. 50(5):1055-1064. (DPL)

A discussion by Mrs. Velma Johnston ("Wild Horse Annie") of her involvement in the wild horse controversy and what legislation has been passed since her interest in wild horses began in 1950. There is a brief history of horses in the U. S. and a thorough discussion of the Wild Horse and Burro Act of 1971 (PL 92-195).

Johnston, Velma B. and M. J. Pontrelli. 1969. Public pressure and a new dimension of quality--horses and burros. Transactions of the Thirty-fourth North American Wildlife and Natural Resources Conference. 34:240-252. (DPL)

A brief history of horses in the United States is followed by the personal story of Mrs. Velma Johnston ("Wild Horse Annie") and the steps she took in her fight to save the wild horses. This testimony is full of key events and their dates; e.g. the Nevada law prohibiting airborne roundups passed in 1953.

Pontrelli, M. J. 1969. Protection for wild mustangs. Defenders of Wildlife News. October, November, December:444-446. (DPL)

Senator Frank E. Moss introduced a bill (S-2166) concerning the protection and preservation of wild horses, specifically

the Spanish Barb and the Andalusian. The bill, if passed, would place these horses on the endangered species list. All wild horses would then be rounded up and the Barb and Andalusian would be separated out to be preserved in protected areas; the remaining wild horses would be separated out and disposed of. Dr. Pontrelli finds the following problem with this proposed legislation: "since all horses are to be rounded up and since most evidence points to the fact that no pure blooded Barb and Andalusians are in the wild, then a strict interpretation of the bill would call for the virtual elimination of all wild horses." He goes on to outline the points he feels are important for legislation concerned with the protection and preservation of wild horses.

Public Law 86-234. 1959. Statutes at Large, Vol. 73, p. 470. (DPL)

An amendment to the United States Code, Chapter 3 of Title 18, which prohibits the use of aircraft or motor vehicles to hunt certain wild horses or burros on land belonging to the United States, and for other purposes.

Public Law 92-195. 1971. Statutes at Large, Vol. 85, p. 649-651. (DPL)

A law requiring protection, management, and control of wild free-roaming horses and burros on public lands. This law places all wild free-roaming horses and burros under the jurisdiction of the Secretary of the Interior or the Secretary of Agriculture.

Tyler, Chuck, ed. 1970. Youth news. Horse and Rider. 9(6):72 (DPL)

Howard H. Caudel, Grand Junction, Colorado, urges readers to write Secretary Walter J. Hickel, Department of the Interior, to urge protection for wild horses in the Bookcliff Mountains of Colorado. According to the author they are presently the target for Sunday afternoon cowboys who round them up.

U. S. Congress. House. 1959. Amendment of Title 18, United States Code, To Prohibit the Use of Aircraft or Motor Vehicles to Hunt Certain Wild Horses or Burros on Land Belonging to the United States. House Report 833 to accompany H.R. 2725, 86th Congress, 1st session. (DPL)

This is the House report concerning H.R. 2725, a bill to prohibit the use of aircraft or motor vehicles to hunt certain wild horses or burros on lands belonging to the United States.

U. S. Congress. House. 1971. Protection, Management, and Control of Wild Free-Roaming Horses and Burros on Public Lands. House Report 681 to accompany S. 1116, 92nd Congress, 1st session. (DPL)

A conference report concerning the disagreement between the House and the Senate regarding S. 1116, a bill requiring the protection, management, and control of wild free-roaming horses and burros on public lands.

U. S. Congress. House. 1971. Requiring Protection, Management and Control of Wild Free-Roaming Horses and Burros on Public Lands. House Report 480 to accompany H.R. 9890, 92nd Congress. 1st session. (DPL)

The House's report concerning H.R. 9890, a bill to require the protection, management, and control of wild free-roaming horses and burros on public lands.

U. S. Congress. House Committee on Interior and Insular Affairs. 1971. H.R. 795 and H.R. 5375, Legislation to Authorize the Protection, Management, and Control of Free-Roaming Horses and Burros on Public Lands. Hearings before a subcommittee of the Committee on Interior and Insular Affairs, House of Representatives, on H.R. 795, H.R. 5375 and Related Bills, 92nd Congress, 1st session. (DPL)

Testimony concerning legislation designed to authorize protection, management, and control of free-roaming horses and burros on public lands.

U. S. Congress. Senate. 1959. Wild Horses and Burros. Senate Report 802 to accompany H.R. 2725, 86th Congress, 1st session. (DPL)

The Senate's report concerning H.R. 2725, a bill to prohibit the use of aircraft or motor vehicles to hunt certain wild horses or burros on lands belonging to the United States.

U. S. Congress. Senate. 1971. Protection, Management and Control of Wild Free-Roaming Horses and Burros on Public Lands. Senate Report 242 to accompany S. 1116, 92nd Congress, 1st session. (DPL)

The Senate's report concerning S. 1116, a bill to require the protection, management, and control of wild free-roaming horses and burros on public lands.

U. S. Congress. Senate. Committee on Interior and Insular Affairs. 1971. S. 862, S. 1116, S. 1090, and S. 1119 To Authorize the Secretary of the Interior and the Secretary of Agriculture to Protect, Manage, and Control Free-Roaming Horses and Burros on Public Lands. Hearings before a subcommittee of the Committee on Interior and Insular Affairs, Senate, on S. 862, S. 1116, S. 1090, and S. 1119, 92nd Congress, 1st session. (DPL)

Testimony concerning legislation to authorize protection, management, and control of free-roaming horses and burros on public lands.

U. S. Department of the Interior and U. S. Department of Agriculture. 1974. A Report to Congress by the Secretary of the Interior and the Secretary of Agriculture on Administration of the Wild Free-Roaming Horse and Burro Act, Public Law 92-195. 58 p., appendices. (DPL, USDA, USDI)

The report fulfills section 10 of public law 92-195, The Wild Free-Roaming Horse and Burro Act. The review presents the progress made and the problems encountered by these two agencies in their administration of wild horses and burros. It also contains considerations for legislative changes which will assist the agencies in meeting the intent of the 1971 Act in a more effective, humane, and cost-conscious manner. Two amendments to the 1971 Act are being considered. The first amendment would permit the use of aircraft or other motorized vehicles to be used for the protection, management, and control of wild horses and burros. The use of such equipment would be in accordance with humane procedures prescribed by the two secretaries. The second amendment would authorize the two secretaries to sell or donate excess animals to private individuals or organizations. Extensive appendices.

MANAGEMENT TECHNIQUES AND PROBLEMS

Cook, C. Wayne. 1975. Wild horses and burros: a new management problem. Rangeman's Journal. 2(1):19-21. (DPL)

The author was Chairman of the National Advisory Board for Wild Free-Roaming Horses and Burros and has been on the Board since it was formed after the passage in 1971 of the Wild Horse and Burro Act. In this article Dr. Cook gives a brief description of the wild horses, their early numbers and control, their management and recent population figures, and finally their present control under the Wild Horse and Burro Act. The main focus of the article is on the inadequacy of the present federal legislation, namely the 1971 act and how it needs to be changed. Dr. Cook suggests several changes. He suggests that the Wild Horse and Burro Act be amended to include provision for control and to allow aircraft, if necessary, to implement this control. The ownership of horses and burros should be transferable to individuals and the law should be amended to provide for the complete removal of horses and burros from certain areas and the establishment of ranges where they can be managed appropriately.

Dudley, Aaron. 1970. Nevadans ponder plight of wild horses. Western Livestock Journal. 49(3):1+. (DPL)

A confrontation occurred between those concerned with the future of the wild horse and members of the Nevada State Cattlemen's Association and Nevada Wool Growers at their combined convention, held in Winnemucca, Nevada, in November. Stockmen suggested that the horses supposed to be wild are simply those turned out and owned by ranchers. Mrs. Velma Johnston ("Wild Horse Annie"), known for her protective efforts, defined a wild horse as those "one generation removed from the domestic animal and...unclaimed." She was joined in her efforts by the President of the Nevada chapter of the National Mustang Association, Newcastle, Utah. Academic support came from an assistant professor of biology, Dr. Michael Pontrelli, at the University of Nevada who, together with his students, had been collecting field data on the mustangs for several years. Ranchers expressed their lack of understanding over public concern for 9,000 "worthless" mustangs and state game officials explained that they did not fall under the heading of wildlife. Lack of management was seen as the chief cause of the mustang problems, but no one present knew from what source management funds would come.

Hall, Ron. 1972. Wild Horse: Biology and Alternatives for Management, Pryor Mountain Wild Horse Range. Bureau of Land Management, Billings District. 67 p. (DPL)

"Population dynamics, distribution and behavior data were collected on the horse herd in the Pryor Mountains, Montana. Population data were collected by aging and sexing 124 horses. Additional sex data were collected by using a spotting scope. Distribution and behavior information was collected through observations for one year. Distribution of the horses is dictated by water, forage and weather conditions. The horses have seasonal home ranges but do not establish territories. Home ranges vary in size with the size being dependent upon available forage. Breeding season seems to be a function of the green-up which brings mares into heat. Average harem group is three to four (3.4) animals. Range trend has been sharply downward for several years. Management will consist of population control and proper distribution. Distribution will be accomplished by water manipulation and/or feeding."

Hall, Ron. 1974. Wild horse capture techniques. Bureau of Land Management. 24 p., illus. Draft. (DPL)

The author discusses and accompanies with illustrations the following capture techniques: water, dry, holding facilities, drug immobilization, and roping. The author concludes by saying, "regardless of the technique used, the manager must have intimate knowledge of the behavior of the horses on the terrain in which they live. The manager must use all the ingenuity at his disposal to humanely capture horses while attempting to keep costs within fundable levels."

National Advisory Board for Wild Free-Roaming Horses and Burros. Proceedings. Irregular. U. S. Department of Agriculture, Forest Service, and U. S. Department of the Interior, Bureau of Land Management, Washington, D. C. (USDA, USDI).

The proceedings of the National Advisory Board which contain current information on pending legislation and lawsuits, recommendations of the Board, population status of wild horses and burros, current management reports of the Bureau of Land Management and Forest Service and other pertinent material.

Reavley, William. 1974. Wild horse board suggests sweeping changes. Conservation News. 39(22):12-14. (DPL)

The decisions of the National Wild Horse and Burro Advisory Board made at the Reno, Nevada 1974 meeting are discussed. To deal with the increasing populations, the Board's plan was as follows: "A series of 'intensive management units' (or wild horse refuges) would be established throughout representative ranges in the West, with the exact number yet unknown but possibly varying between 10 and 20. The remainder of the wild horse and burro populations not in the designated management areas would then be removed from the balance of the public domain." Vehicles such as helicopters would have to be used to round up the left-over horses and burros and those not claimed would be sold to defray the cost of rounding them up. This plan is in conflict with existing legislation.

Remsberg, Charles. 1967. One man's fight to save the mustangs. True; The Man's Magazine. April:52-53, 86-90. (DPL)

Outlines the early controversy in the Pryors where the Bureau of Land Management and the Tillett family disagreed over the outcome of wild horses grazing on federally leased land.

Seals, Samuel J. 1972. Murderers Creek Wild Horse Area, Biological Unit Management Plan, Malheur National Forest; Proposed Final Draft. U. S. Forest Service, 51 p., maps. (DPL)

"The objective of this plan is to provide for the protection, management and control of wild, free-roaming horses in a natural ecological balance on the Murderers Creek Wild Horse Area." Very good data is contained in the study which includes habitat and population dynamics. Resource and non-resource conflicts are discussed and an action plan for keeping the herd at less than 100 animals concludes the paper. Well documented with a bibliography.

U. S. Department of the Interior. Bureau of Land Management. 1973. Proposed Wild Free-Roaming Horse and Burro Management Regulations. Final Environmental Statement. 73-35. 133 p. (DPL)

This publication describes and discusses the environmental impact of regulations to implement the Wild and Free-Roaming Horse and Burro Act, PL 92-195. It discusses proposed regulations for the protection, management, and control of wild free-roaming horses and burros on national resource lands administered by the Bureau of Land Management. The proposal

describes the system of management that would be used and contains criteria and procedures for the program. Adverse environmental effects such as limiting the availability of forage and habitat to other grazing animals is discussed. Alternative management proposals are listed. Comments on the draft environmental statement are included.

U. S. Department of the Interior. Bureau of Land Management. 1974. Livestock Grazing Management on National Resource Lands. Final Environmental Impact Statement. 3 vols. misc. paging. (DPL, USDI)

"This is a programmatic statement relating to the livestock grazing management program administered by the Bureau of Land Management (BLM) and analyzes the environmental impact of this program on the national resource lands (NRL), public lands administered by the Bureau of Land Management. This statement will provide a broad description of, and the alternatives to, the livestock grazing management program, and their impacts on the environment. It will serve as the foundation for subsequent environmental analyses and statements that may be required. It will identify factors needing close attention in such analyses to obtain definitive information." (Note: Because of a pending lawsuit more specific information will be forthcoming in the near future.)

ROUNDUPS

Anonymous. 1949. Wyoming circuss F'R dudes: the horse roundup by aircraft. Illustrated London News. 215:1030-1031. (DPL)

A pictorial essay of a 1949 Wyoming roundup which used aircraft as a means of rounding up the wild horses.

Anonymous. 1958. Mustang murder. True; The Man's Magazine. June:54-57. (DPL)

A description of a wild horse roundup in Nevada aided by aircraft and pickup trucks. The legality of rounding up wild horses in various states and on federal lands is discussed.

Anonymous. 1973. Federal mustang protection tested...horses brutalized in Idaho roundup. Mainstream. 4(2):3-4. (DPL)

This article, accompanied by photographs, summarizes the Howe, Idaho wild horse roundup where a large band of horses were run off a cliff and left there to die. The ineffectiveness of PL 92-195 for protecting wild horses is discussed.

Anonymous. 1974. Wild Horse & Idaho Justice. Humane Society of the United States News. Autumn:2. (DPL)

The article discusses the Howe, Idaho horse roundup. Because the Idaho State brand inspector ruled that the wild horses rounded up on public lands were privately owned by the ranchers who rounded them up, the Humane Society is concerned that the 18 surviving horses may be returned to the ranchers. Senators Abourezk and Gude have filed claims for the horses on behalf of the American people and the final decision as to where the horses go is up to the Department of the Interior.

Amaral, Anthony. 1970. Mustanging with Pete Barnum. Nevada Highways and Parks. Fall:8-10, 31, 35-37, 42. (DPL)

An interesting and well-illustrated article about Pete Barnum, one of the all-time great mustangers in Nevada, responsible for inventing the circular canvas trap.

Amaral, Anthony. 1971. The wild horse--worth saving? National Parks and Conservation Magazine. March:21-24. (DPL)

The author discusses a roundup of 70,000 Nevada wild horses in 1950, a roundup which he believes was the last massive roundup of feral horses in the United States. Current legislation is discussed as ineffective because there is little authority given to make sure it is enforced. The mustang of today is not the tough, hot-blooded descendent of the Spanish horse; those mustangs disappeared before the turn of the century. Today's wild horse is a mixture of many things, made up of a conglomeration of eastern breeds from Europe, along with Spanish and North African blood. A great number of the "American" horses came from ranchers and farmers who released them onto the prairie. The author recommends that the government be periodically allowed to round up excess horses.

Bundy, Gus. 1953. Rounding up wild horses. National Humane Review. March:16-20. (DPL)

This article describes the early truck and airplane roundups which were common in Nevada in the late 1940's and early 1950's. The article is accompanied by the author's photographs.

Clark, Gibbons. 1946. Yakima Indian riders round up wild horses. American Cattle Producer. July:28, 33. (DPL)

The Indians rounded up horses in 1946 and sold them to finance sports and other activities of the all-Indian American Legion Post there. The horses were forced from their home range to confuse them and due to their being in strange new surroundings and flustered with excitement, they became tired. In this panicked condition they were easy to capture and herd into corrals. Local Indian reservation and forestry officials estimate that there were more than 5,000 wild horses roaming over the Fort Simcoe and Medicine Valley areas.

Cotterman, Dan. 1973. Wild horse massacre. Horse and Rider. August: 28-31. (DPL)

A discussion listing the events surrounding the Howe, Idaho wild horse "massacre" which occurred in February, 1973. According to the American Horse Protection Association the "hunt" violated two federal laws and an Idaho State anti-cruelty law. Bureau of Land Management negligence concerning the enforcement of the two federal laws was claimed by

several wild horse organizations. The author points out that the federal laws are inadequate because there is no provision for the acquisition of funds to carry out and enforce the laws. There is a thorough discussion of problems brought about by the Taylor Grazing Act of 1934 and its relationship to the use of "National Resource Lands."

Riordan, Marguerite. 1970. Wild horse swindle. The Cattleman. 55(9):151. (DPL)

In the early 1900's the United States Livestock Company was organized to sell wild horses running in Arizona. The company sold bills of sale to people who were willing to try to catch the animals. The ease of capture was misrepresented, and many people lost their savings or homes. Some of their stories, and the results of the swindle, are recounted.

Santee, Ross. 1958. The last run. Arizona Highways. November: 26-35. (DPL)

This article discusses the "good old days" of wild horse chases and roundups.

Schuessler, Raymond. 1962. The massacre of the mustangs. Hoofs and Horns. February: 8-9, 27. (DPL)

This article points out that as early as 1805 wild horses were being rounded up and killed to control their populations. The author traces the decline of the wild horse to the present day.

Schuessler, Raymond. 1970. The massacre of the mustang. Pony. 22(253):22-23. (DPL)

The savage and proud wild horses of America who toiled dutifully when domesticated and literally pulled and carried America to prosperity, have gradually declined in numbers since the turn of the century. The mustangs at one time numbered five to seven million: their interference with cattlemen and the cattlemen's successful campaign to exterminate them are described. The article estimates that there are 20,000 wild horses in the West which are not protected in any way.

Wilson, George C. 1974. Slaughter of wild horses. Defenders of Wildlife News. 49(2):104-106. (DFL)

The Howe, Idaho wild horse roundup is discussed in detail with first-hand photographs and descriptions by people who were actually there. The court history of the case is outlined.

WILD HORSE RANGES AND REFUGES

Anonymous. 1963. The West: a home on the range. Newsweek. 2 September:30-31. (DPL)

The article concerns itself with the formation of a wild horse range in the northeast corner of Nellis Air Force Base in Nevada. The article points out that the range is a tribute to the hard work of Mrs. Velma Johnston ("Wild Horse Annie") in behalf of the wild horse.

Anonymous. 1968. The last roundup? Newsweek. 13 May:95-96. (DPL)

The herd of 200 horses in the Pryor Mountain Range on the Montana-Wyoming border will be culled to 30 horses in order to protect the over-used range. This Bureau of Land Management decision is annoying the local citizens who want to see the herd kept at 100 so they "won't inbreed and spoil the mustang blood."

Anonymous. 1969. Wild horse refuge. Chronicle of the Horse. 33(8):15. (DPL)

A discussion of the Pryor Mountain Wild Horse Range of 31,000 acres along the Wyoming-Montana border where wild horse herds will be protected and maintained.

Anonymous. 1973. Last of the wild horses. Horse and Horseman. April:24-29. (DPL)

This article discusses the relocation of the Pryor Mountain wild horses that were culled from the herd because of over-population. "Inbreeding, encroaching civilization and a scarcity of grazing forage have trimmed the numbers of the spirited little beasts." The article goes on to discuss the wild horses of the Pryor Mountains that may be sold because they are "defoliating the range." The date of June 14 has been picked to auction off the horses and the controversy is drawing a great deal of attention.

Bruemmer, Fred. 1967. The wild horses of Sable Island. Animals. 10:14-17. (DPL)

A discussion of the wild horses of Sable Island in Canada. These horses are believed to be descended from New England horses, liberated on Sable Island more than 200 years ago. A

brief history of the island and its inhabitants is given. There is a thorough account of the island's present inhabitants, the wild horses, presently protected by the Canadian government.

Gilluly, Richard H. 1971. The mustang controversy. Science News. 99(13):219-220. (DPL)

The mustang controversy is clouded with emotionalism. Neither side, those who want them eliminated vs. those who want them left alone, have substantial arguments or research to back them up. The new pending legislation would establish wild horse sanctuaries on public lands. One such range has been established in the Pryor Mountains. The Bureau of Land Management is worried about competition between the horses and wild life species in the area. The author points out that much research is needed on wild horses and their natural habitat.

Grover, Dorys Crow. 1964. Haven for wild horses. Western Horseman. December:28, 107-110. (DPL)

The State of Nevada has the only wild horse refuge in the nation. It comprises 435,000 acres in the northeast corner of Nellis Air Force Base, Nevada. It will be administered by the Bureau of Land Management and the size of the herd will be about 200 horses. A general discussion of wild horses in the West concludes the article.

Klataske, Ron. 1970. Wild horse range. Wyoming Wildlife. 34(9): 10-15. (DPL)

The events leading to the establishment of the Pryor Mountain Wild Horse Range are outlined. First, an advisory committee was established to formulate a series of guidelines for the Bureau of Land Management to follow in administering the range. These guidelines included: that the size of the herd should be maintained at no less than 100 head; that if culling were necessary the diseased, deformed or branded animals should be culled, leaving the horses with roan, mouse and buckskin color characteristics; and that supplemental feeding would be avoided if possible.

Moorhouse, James A. and Gene Nodine. 1967. Wild horse haven. Our Public Lands. Fall:4-6. (DPL)

The authors trace the first conquistador's horses to the "multicolored, short-coupled, grass-bellied animal" used by

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the Indians and known today as wild horses. In 1967, an estimated 17,000 remained in nine western states. A 394,000-acre reserve known as the Nevada Wild Horse Range was established in 1962 with cooperation from the Department of the Interior, the Air Force and the Nevada Fish and Game Commission.

Most, Chuck. 1969. Wild horses of the Pryors. Our Public Lands. Fall:18-21. (DPL); Defenders of Wildlife News. 45(1): 69-72. (DPL)

In 1968 controversy arose concerning the outcome of a 200-head herd of wild horses in the Pryor Mountains on the Montana-Wyoming border. The Bureau of Land Management, concerned about worsening range conditions in the area, suggested these alternatives: maintaining the greatest number of horses, maintaining fewer horses to further reduce competition with deer, and remove all the horses and manage the area for wildlife. Finally a 32,000-acre Pryor Mountain Wild Horse Range was established in 1968 and a citizen's advisory committee was appointed to study the range and make recommendations to the Bureau of Land Management for future management. The committee's recommendations are included.

Riley, J. 1969. The mustangs. West; Los Angeles Times. 27 July: 8-11. (DPL)

The article describes the efforts of the Tillett family to protect the mustangs from the Bureau of Land Management, the State Fish and Game Department and the Livestock Commission. The efforts of Mrs. Velma B. Johnston, "Wild Horse Annie," of Reno, Nevada, who has worked with the Humane Society and the Tilletts, are also described. The Tillett Ranch comprising 9,000 acres, plus adjacent federal land, is located on the Montana-Wyoming border.

Scher, Zeke. 1969. Reprieve for the mustangs. 1969. Empire; The Magazine of the Denver Post. 12 October:10-13. (DPL)

Mainly a report on the establishment of the Pryor Mountain Wild Horse Advisory Committee and their recommendations for the range.

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Schwartz, Barney. 1949. A kingdom for wild horses. Nature Magazine. 42(1):8-12, 50. (DPL)

As early as 1950, photographer Verne Wood started promoting a plan for a state-controlled refuge for wild horses in Wyoming. He used his wild horse pictures for publicity. The proposed refuge would be controlled by fish and game wardens, and "some four hundred head would be permitted to live without danger of being rounded up by professional horse-hunters." The author goes on to describe the aspects of the horse roundups. He maintains that the refuge would become a great tourist attraction.

U. S. Department of the Interior. Bureau of Land Management. 1968. Information Sheet: Pryor Mountain Horse Area. 2 p., mimeo. (DPL)

The information sheet discusses the deterioration of the range in the Pryors and outlines the reasons for decreasing the wild horse populations. Three management alternatives are listed followed by a brief discussion.

U. S. Department of the Interior. Bureau of Land Management. Denver Service Center. 1969? Resources of the Pryor Mountain Wild Horse Range. Manuscript. Vol. 1:Text. 69 p. Vol. II: Photographs. n.p. (DPL)

A thorough study of the resources of the range in the Pryor Mountains, Wyoming. Soil information, plant species, hunting harvest statistics, animal species and population dynamics are among the topics covered. The objectives of the report were "to evaluate existing resource information and data available on the wild horse range; to technically assess the vegetation, soil and moisture relationships using this assessment as a basis for recommendations relating to rangeland--watershed management and habitat management; and to identify the need for additional data." Color photographs give a specific and general overview of the range condition.

U. S. Department of the Interior. Bureau of Land Management: Susanville District. 1973. Wild horses and burros. n.p. (DPL)

A report which evaluates the present horse and burro situations in the Susanville District of California. Based on research of the present populations; including the range condition and competition with other animals, the report recommends the implementation of certain management practices. Populations were determined by use of aerial survey counting techniques.

U. S. Department of the Interior. Bureau of Land Management, Susanville District. 1974. Wild Horses and Burros, Environmental Analysis. 52 p. (DPL)

A summary of an 18-month study of the wild horses and burros of the Bureau's Susanville District in California. The study indicates definite over-grazing and competition problems in that area. Population counts reported were partially determined by aerial surveys. Eight alternative recommendations are made based on the study.

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